



U.S. Department  
of Transportation

Pipeline and  
Hazardous Materials  
Safety Administration

400 Seventh Street, S.W.  
Washington, D.C. 20590

SEP 27 2005

DOT-E 12643  
(FIFTH REVISION)

EXPIRATION DATE: August 31, 2007

(FOR RENEWAL, SEE 49 CFR § 107.109)

1. GRANTEE: Northrop Grumman Space Technology (NGST)  
Redondo Beach, CA
2. PURPOSE AND LIMITATION:
  - a. This exemption authorizes the transportation in commerce of certain non-DOT specification refrigeration systems described as pulse tube coolers containing helium. This exemption provides no relief from the Hazardous Materials Regulations (HMR) other than as specifically stated herein.
  - b. The safety analyses performed in development of this exemption only considered the hazards and risks associated with transportation in commerce.
3. REGULATORY SYSTEM AFFECTED: 49 CFR Parts 106, 107 and 171-180.
4. REGULATIONS FROM WHICH EXEMPTED: 49 CFR §§ 173.302 and 175.3 in that the refrigeration system is not an authorized packaging, except as specified herein.
5. BASIS: This exemption is based on the application of NGST dated August 4, 2005 submitted in accordance with § 107.109.

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6. HAZARDOUS MATERIALS (49 CFR § 172.101):

Hazardous Material Description			
Proper Shipping Name	Hazard Class/ Division	Identification Number	Packing Group
Helium, compressed	2.2	UN1046	N/A

7. SAFETY CONTROL MEASURES:

a. PACKAGING - Prescribed packaging is a non-DOT specification, non-refillable, hermetically sealed, refrigeration system described as a pulse tube cooler (PTC). The PTC is not equipped with a pressure relief device. In the event of extreme temperatures, the PTC is designed to relieve pressure through its seals to prevent bursting. The PTC must conform with NGST drawing 455673 for the standard 65 series Pulse Tube Cryocooler and drawing 457157 for the HEC-HPT Pulse Tube Cryocooler on file with the Office of Hazardous Materials Exemptions and Approvals (OHMEA). The PTC must be designed and tested in conformance with MIL-STD 1522 "Standard General Requirements for Safe Design and Operation of Pressurized Missile and Space Systems". The material of construction is aluminum alloy 2219.

Additionally, the PTC must conform with the following:

Maximum service pressure: 500 psig  
(maximum expected operating pressure)

Minimum design burst pressure: 1250 psig

Maximum volume: Drawing 455673 598 cc  
Drawing 457157 1100 cc

b. TESTING - Each pulse tube cooler must be proof pressure tested to at least 915 psig before shipment.

c. OPERATIONAL CONTROLS -

(1) The pulse tube cooler must be shipped inside a strong, foam-filled, plastic shipping container in conformance with Hardigg drawing #1413-0505 or NGST

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drawing SK8375 for the 455673 assemblies and NGST drawing H8942 for the 457157 assemblies. All drawings must be on file with the OHMEA.

(2) Emergency response information provided with the shipment and available via an emergency response telephone number must indicate that the pulse tube coolers are not fitted with pressure relief devices and must provide appropriate guidance in the event of fire.

8. SPECIAL PROVISIONS:

a. A person who is not a holder of this exemption who receives a package covered by this exemption may reoffer it for transportation provided no modification or change is made to the package or its contents and it is reoffered for transportation in conformance with this exemption and the HMR.

b. A current copy of this exemption must be maintained at each facility where the package is offered or reoffered for transportation.

c. Each outside packaging must be marked "DOT-E 12643" in letters and numbers as specified in § 172.302(b).

9. MODES OF TRANSPORTATION AUTHORIZED: Motor vehicle, cargo aircraft only, and passenger-carrying aircraft (see § 175.85(a)).

10. MODAL REQUIREMENTS: A current copy of this exemption must be carried aboard each aircraft or motor vehicle used to transport packages covered by this exemption. The shipper must furnish a copy of this exemption to the air carrier before or at the time the shipment is tendered.

11. COMPLIANCE: Failure by a person to comply with any of the following may result in suspension or revocation of this exemption and penalties prescribed by the Federal hazardous materials transportation law, 49 U.S.C. 5101 et seq:

- o All terms and conditions prescribed in this exemption and the Hazardous Materials Regulations, 49 CFR Parts 171-180.
- o Persons operating under the terms of this exemption must comply with the security plan requirement in Subpart I of Part 172 of the HMR, when applicable.

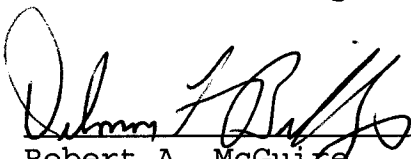
- o Registration required by § 107.601 et seq., when applicable.

Each "Hazmat employee", as defined in § 171.8, who performs a function subject to this exemption must receive training on the requirements and conditions of this exemption in addition to the training required by §§ 172.700 through 172.704.

No person may use or apply this exemption, including display of its number, when this exemption has expired or is otherwise no longer in effect.

12. REPORTING REQUIREMENTS: Shipments or operations conducted under this exemption are subject to the Hazardous Materials Incident Reporting requirements specified in 49 CFR §§ 171.15 - Immediate notice of certain hazardous materials incidents, and 171.16 - Detailed hazardous materials incident reports. In addition, the grantee(s) of this exemption must notify the Associate Administrator for Hazardous Materials Safety -- OHMEA, in writing, of any incident involving a package, shipment or operation conducted under terms of this exemption.

Issued in Washington, D.C.:

*for*   
Robert A. McGuire  
Associate Administrator for  
Hazardous Materials Safety

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DATE

Address all inquiries to: Associate Administrator for Hazardous Materials Safety, Pipeline and Hazardous Materials Safety Administration, Department of Transportation, Washington, D.C. 20590. Attention: PHH-31.

Copies of this exemption may be obtained by accessing the Hazardous Materials Safety Homepage at <http://hazmat.dot.gov/exemptions> Photo reproductions and legible reductions of this exemption are permitted. Any alteration of this exemption is prohibited.

PO: CWFreeman/alb